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HEALTH PSYCHOLOGY | RESEARCH ARTICLE

Psychometric properties of the Swedish version of the experiences in close relationships – relationship structures questionnaire (ECR-RS global nine-item version)

Andreas Sarling¹, Billy Jansson¹, Matilda Englén¹, Anna Bjärtå¹, Elisabet Rondung¹ and Örjan Sundin^{1*}

Abstract: Previous self-report measures of attachment have used different assessment approaches, and a common conceptualization is using a dimensional perspective in which attachment is measured with two factors: attachment anxiety and attachment avoidance. The Experiences in Close Relationships—Relationship Structures Questionnaire (ECR-RS) has, prior to this study, been assessed for psychometric properties regarding specific relationships, but not in a shorter version for close relationships in general. In this paper, we present a Swedish translation of the ECR-RS Global nine-item version assessed for factor structure and psychometric properties by using a cross-validation approach with two separate adult samples. In Study 1 ($N = 492$), participants were randomly split into two subsamples. Using an exploratory factor analysis (EFA), the first subsample was used for finding the best-fitting model while the second subsample was used to test the a priori model using confirmatory factor analysis (CFA). In Study 2 ($N = 806$), we set out to validate the factor structure yet again by using CFA. Results from the EFA supported a two-factor structure with six items for attachment avoidance and three items for attachment anxiety. In the validation of the factor structure using CFA, both studies showed that all model-fit indices were good only after some modification, including removal of one avoidance item. Methodological reasoning and implications are

ABOUT THE AUTHOR

Many factors are potentially involved in the impact of emotions on the Autonomic Nervous System (ANS). Our group are particularly interested in autonomic balance and how this balance is influenced by emotion through genetic and other factors. Attachment could in this context be an interesting factor explaining some of the variance to such balance (or imbalance).

PUBLIC INTEREST STATEMENT

Previous self-report measures of attachment have used different assessment approaches, and a common conceptualization is using a dimensional perspective in which attachment is measured with two factors; attachment anxiety and attachment avoidance. In this paper, we present a Swedish translation of the ECR-RS Global nine-item version assessed for factor structure and psychometric properties by using a cross-validation approach with two separate adult samples. The results indicate that this short global measure is applicable to use in research contexts to capture overall, trait-like, attachment on the dimensions of avoidance and anxiety, and can have relevance for a plethora of research questions about social and emotional functioning, and for studies exploring which factors that influence adults' general attachment security.

discussed. The final eight-item model showed good internal consistency, as well as good convergent and discriminant validity, and multi-group invariance tests for gender and age showed no violations to invariance. Findings are encouraging to use this short global attachment self-report instrument, but further validation is advised.

Subjects: Health Psychology; Testing, Measurement and Assessment; Developmental Psychology

Keywords: attachment; ECR-RS Global; psychometric properties

Attachment is based on an emotional bond to significant individuals, so-called “attachment figures”. When these bonds are perceived as safe and supportive, the attachment figures serve as a secure base from which to explore the environment, but when the perceived support is low or unreliable, individuals show dysfunctional tendencies in both regulating emotions and coping with distress (Mikulincer & Shaver, 2005; Robles & Kane, 2013). Attachment bonds form our emotional functioning and how we relate to both ourselves and to others (Gilbert, 2009). Positive interactions with attachment figures foster secure bonds that, typically, are related with several aspects of social functioning (Fraley, 2019), and a tendency to provide care to oneself (Mikulincer & Shaver, 2004) and to others (Mikulincer et al., 2004; Mikulincer & Shaver, 2005).

From having parents as primary attachment figures at a young age, adults usually come to have peers, and most often, romantic partners as their secure bases (Fraley, 2019). Individuals’ attachment orientations are somewhat stable, but the association between early attachment experiences and attachment in adulthood tend to be rather weak (Fraley, 2019). In their proposed framework, called the Attachment Security Enhancement Model (ASEM), Arriaga et al. (2018) emphasized the changeable nature of attachment. This framework sheds some light on how attachment security orientations change in an interplay with current close relationships. Attachment security has been viewed as a global model, in which an individual’s general attachment orientation usually is relatively similar across relationships. While agreeing with this general view, Fraley (2019) has also pointed out that there are exceptions to that rule by showing differentiation between different relationships.

Both categorical and dimensional approaches have been used in theoretical models of attachment, with most empirical support existing for the dimensional models (Mikulincer & Shaver, 2005; Ravitz et al., 2010). An established dimensional approach conceptualizes attachment security on two dimensions; attachment anxiety and attachment avoidance (Cameron et al., 2012; Ravitz et al., 2010). Low levels on both dimensions indicate secure attachment, whereas high levels on the two dimensions indicate insecure attachment (Cameron et al., 2012; Mikulincer & Shaver, 2004, 2005). Although the dimensions sometimes are correlated with each other, they have different meanings (Cameron et al., 2012; Fraley et al., 2011). Whereas attachment avoidance is characterized by distrust, striving for independence, distancing from significant individuals, and emotional disengagement, attachment anxiety is characterized by anxious reactions to threats and worrying about the availability of significant individuals (Mikulincer & Shaver, 2005, 2018).

In a review, Ravitz et al. (2010) found 21 self-report questionnaires for measuring adult attachment. Each questionnaire varied in length, relationship focus, approach (categorical or dimensional), and assessment of different dimensions and categories. Two of the questionnaires that showed strong psychometric properties, with respect to both reliability and validity, were the Experiences in Close Relationships (ECR) and the Experiences in Close Relationships-Revised (ECR-R; Ravitz et al., 2010). These questionnaires contain 36 items measuring attachment anxiety and attachment avoidance, either concerning one’s partner, or in close relationships in general. In an attempt to develop a short questionnaire to assess more specific relationship domains with intercorrelations between the domains, Fraley et al. (2011) adapted items from the ECR-R to develop the Experiences in Close

Relationships—Relationship Structures Questionnaire (ECR-RS). This questionnaire contained four relationship domains (mother, father, partner, and friend) with nine items each yielding 36 items in total. Factor analytic work for the ECR-RS confirmed two-dimensional models for each of the relationship domains, with good reliability, and good convergent and discriminant validity (Fraley et al., 2011). The ECR-RS for specific relationships has also been translated and validated in other languages; in Danish (Donbaek & Elklit, 2014) and Turkish (Karatas & Demir, 2019) with adolescent participants, and in Portuguese with adult participants (Moreira et al., 2015). In the evaluation of the English and Czech versions of the global assessment (combined 36 items from specific relationships), cross-cultural support was found for a bifactor model (Siroňová et al., 2020), meaning that global attachment patterns might influence how we experience different relationships, but that attachment in specific relationships, independently, also add explanation to these experiences. To the best of our knowledge, none of the ECR-scales have previously been evaluated in a Swedish translation. There are, however, validations of a short form of the Attachment Style Questionnaire (ASQ-SF; Axfors et al., 2017) and the Relationship Questionnaire (RQ) and the Relationship Scales Questionnaire (RSQ, Bäckström & Holmes, 2001), but none of these scales capture the dimensions of attachment anxiety and attachment avoidance directly.

Fraley (2014) has updated the ECR-RS with the purpose of assessing global attachment (i.e., attachment across different close relationships) by using only nine items for close relationships in general, making it a concise and more trait-like measure of attachment security. To our knowledge, this nine-item global attachment scale has never been subjected to a psychometric evaluation. A validation of this instrument enables the measurement of an individual's general attachment style without addressing pre-specified relationships, but instead allowing participants to freely reflect on their close relationships. This opens up for reflection about other close relationships (such as siblings and other close relatives, friends, and colleagues) that previous versions of ECR-scales do not capture (Siroňová et al., 2020). The shorter nine-item format of the ECR-RS Global, as compared with 36-item versions of ECR-scales (Fraley et al., 2011; Ravitz et al., 2010), might reduce the risk of non-differentiation in answers related to longer questionnaires (Herzog & Bachman, 1981). In addition, as research often involves measures of several constructs, shorter measures are less time-consuming and are, therefore, likely to decrease fatigue of responders and consequently increase the response rates (Galesic & Bosnjak, 2009; Smith et al., 2011).

The present study had two objectives, of which the first was to assess the factor structure and psychometric properties of a Swedish translation of the ECR-RS Global using a combination of exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). The second objective was to validate the factor structure, using CFA in a second sample.

1. Study 1

1.1. Participants and procedure

Swedish-speaking participants ($N = 582$, ≥ 18 years) were recruited through convenience sampling, using one social media channel of Mid Sweden University (Facebook) and e-mail distribution lists of different academic departments at the university. Data were collected via Qualtrics (<http://www.qualtrics.com>) during March to May 2020. The respondents were informed about the research purpose (measuring social functioning), questions regarding confidentiality, anonymity, and right to discontinue the survey at any given point prior to submitting it. Before entering the survey, each participant had to give their consent to participating by agreeing to a statement of informed consent. Due to the anonymity of the subjects, the informed consent, and earlier ethical approval of similar surveys and subjects, the local ethical committee approved the study and did not find it necessary to seek ethical approval from the regional ethics committee. After giving an active digital informed consent, 492 participants (aged 18–73 years, $M = 28.97$, $SD = 8.35$, 78.7% women) completed the survey.

1.2. Instrument

In addition to the ECR-RS global, questions regarding demographics and three other measures (measuring social phobia, autism spectrum quotient, and depression) were administered in randomized order in the survey. A Swedish translation of ECR-RS Global (English version in Fraley, 2014) was used to measure Attachment Security. One of the authors of this study (ÖS) did the first draft of the translation. The Swedish translation was then sent for a back translation to an experienced bilingual translator. Then, three of the authors of this study (AB, ER, and ÖS), all being fluent in English, inspected the forward and backward translations. Thereafter, the involved authors discussed the translations, focusing on culturally applicable expressions, until reaching consensus.

The scale consists of nine items in total; six for the subscale Attachment Avoidance and three for the subscale Attachment Anxiety. Participants answered the items on a scale from 1 to 7 (1 = *not at all true*, 7 = *completely true*). Four of the items were reversed (see Table 1). Cronbach's α was .84 for Attachment Avoidance, and .86 for Attachment Anxiety in the present study.

1.3. Data analytic procedures

A cross-validation approach was adopted, and the overall sample ($N = 492$) was randomly split into two subsamples. The first subsample was used for finding the best-fitting model using Exploratory Factor Analyses (EFA, $N = 246$). In evaluating factorial validity, in the EFA all of the nine items were entered using the Maximum Likelihood method using with oblique rotation. Factors with eigenvalues of greater than one were extracted.

Using CFA ($N = 246$) with Maximum Likelihood estimator, we then tested if the ECR-RS structure represented two correlated first-order factors. In addition, dependent on the outcome of the EFA, an alternative factor structure was compared with the proposed two-factor structure of the scale.

Apart from chi-square values and the relative chi-square statistics (χ^2/df) as a measure of model fit, three conventional indices of goodness-of-fit were calculated; the root-mean-square error of approximation (RMSEA), the standardized root-mean-square residual (SRMR), and the comparative fit index (CFI). With respect to the RMSEA, values below 0.06 are considered a good-fitting model and values below 0.08 indicate an adequate fit. SRMR values around .08 or lower indicates a good fit to the data. CFI values above .90 suggest an acceptable fit and values above .95 a close fit. See Hu and Bentler (1999) for suggested cutoff criteria for fit indices. An acceptable relative chi-square is reached when $\chi^2/df < 3$ (Schermelleh-Engel et al., 2003).

Composite Reliability (CR) was used as a measure of internal consistency of the factors, where values greater than .70 are indicative of good reliability. Discriminant validity is achieved when average variance extracted (AVE) is greater than maximum shared squared variance (MSV). For convergent validity, AVE should be equal or greater than .50 and lower than CR. Put differently, variance explained by the construct should be greater than the measurement error and greater than cross-loadings (see, e.g. Hair et al., 2010, for suggested thresholds). We used JASP (Version 0.14; JASP Team, 2020) to conduct all statistical analyses.

2. Results

Table 1 shows the results of the EFA. Two factors with eigenvalues greater than one were extracted. We observed a clean factor structure with no apparent cross-loadings, and with no need for modification. Factor 1 consisted of six items regarding avoidance and Factor 2 consisted of three items regarding anxiety.

The goodness-of-fit indices for the models as well as the relative χ^2 difference tests of improvements of the CFAs are presented in Table 2. The two-factor structure model based on all nine items showed that the relative chi-square statistics and the CFI reached acceptable fit. However, the RMSEA, the SRMR, and the relative chi-square failed to provide adequate fit of the model. The modification indices suggested that the inclusion of correlated error terms (Item 5 and Item 6) in

Table 1. Factor Loadings from the Exploratory Factor Analysis With a Maximum Likelihood Method and Oblique Rotation

| Items (In Swedish) | Avoidance | Anxiety | Uniqueness |
|---|-------------|-------------|------------|
| 1. It helps to turn to people in times of need (R) (Det hjälper att vända sig till andra när det är besvärligt) | 0.69 | -0.06 | 0.54 |
| 2. I usually discuss my problems and concerns with others (R) (Jag pratar vanligtvis om mina problem och bekymmer med andra) | 0.91 | -0.06 | 0.19 |
| 3. I talk things over with people (R) (Jag pratar igenom saker och ting med andra) | 0.88 | -0.06 | 0.24 |
| 4. I find it easy to depend on others (R) (Jag har inga problem med att lita på andra) | 0.48 | 0.24 | 0.66 |
| 5. I don't feel comfortable opening up to others (Jag känner mig inte bekväm med att öppna mig för andra) | 0.42 | 0.09 | 0.80 |
| 6. I prefer not to show others how I feel deep down (Jag föredrar att inte visa andra vad jag känner innerst inne) | 0.56 | 0.30 | 0.52 |
| 7. I often worry that other people do not really care for me (Jag oroar mig ofta över att andra människor inte riktigt bryr sig om mig) | 0.09 | 0.74 | 0.41 |
| 8. I'm afraid that other people may abandon me (Jag är rädd för att människor ska överge mig) | -0.04 | 0.83 | 0.32 |
| 9. I worry that others won't care about me as much as I care about them (Jag oroar mig över att andra inte bryr sig om mig lika mycket som jag bryr mig om dem) | -0.04 | 0.88 | 0.23 |

Note. R = Reversed item.

the model would improve the model fit substantially. With this modification, the RMSEA still failed to reach an acceptable fit of the model. The modification indices suggested that permitting “I find it easy to depend on others” (from the factor Avoidance) to load on both the Avoidance and Anxiety factors would improve model fit, but adding a path would complicate interpretation of the two factors and this item was therefore removed. With this modification, the model was further improved, with all fit indices reaching good ranges.

Table 2. Estimates of Confirmatory Factor Analyses: Model-Fit Indices for a Two-Factor Model and Two Revised Two-Factor Models

| Model | χ^2 (df) | χ^2/df | CFI | SRMR | RMSEA | $\Delta \chi^2$ |
|-------------------------------|---------------|-------------|-----|------|-------|-----------------|
| Two-factor | 96.81 (26) | 3.72 | .93 | .09 | .10 | |
| Two-factor-R1 ^{a)} | 68.75 (25) | 2.72 | .96 | .08 | .08 | 30.06 |
| Two-factor-(R2) ^{b)} | 28.24 (18) | 1.57 | .99 | .06 | .05 | 40.51 |

Note. CFI = Comparative Fit Index, SRMR = Standardized Root Mean square Residual, RMSEA = Root Mean Square Error of approximation.

(a) The proposed 2-factor structure with error terms for Item 5 and Item 6 correlated.

(b) The proposed 2-factor structure with 8 items (minus Item 4) with error terms for Item 5 and Item 6 correlated.

The final model, presented in Table 3, shows that CR indices indicated a good reliability for both factors (above .70). In addition, indices of convergent validity indicated no validity concerns, with AVE being less than CR and greater than .50. More importantly, indices of discriminant validity indicated good validity for both factors, with all AVE markedly higher than MSV.

3. Discussion

The results from the EFA showed the best fit for a two-factor structure of the ECR-RS Global including nine items for the dimensions avoidance (six items) and anxiety (three items). This factor structure is in line with previous two-factor conceptualizations of attachment (Cameron et al., 2012; Ravitz et al., 2010) and is equal to findings from the ECR-RS with nine items for each specific relationship domain (Fraley et al., 2011).

The CFA indicates an inadequate fit for the proposed two-factor model when all nine items are included, but reaches a good fit for all indices after modifications. That is, by allowing the inclusion of correlated error terms (Item 5 and Item 6), apart from the RMSEA, the chi-square statistics and the other fit indices reached acceptable fit. The modification indices suggested that permitting "I find it easy to depend on others" to cross-load would improve the model fit, but since it would complicate interpretation of the two factors, we decided to remove the item. The removal of this item could also be justified based on the EFA (see Table 1), as this item had a relatively weak loading with its parent factor (contributing to weaker convergent validity), and was an avoidance item that tended to load on the anxiety factor too. After the removal of Item 4, the chi-square statistics and the other fit indices reached acceptable fit. Although the numbers of participants (according to rules of thumbs) were sufficient for validating a nine-item instrument, the sample size will affect precision and replicability of the results. Because of this, and the post hoc modifications made in this study, we decided to conduct a second study using CFA to cross-validate the measurement model of this instrument in a larger sample.

4. Study 2

4.1. Participants and procedure

Using the same survey as described previously, 1 169 Swedish-speaking participants (≥ 18 years) were recruited for an online survey using social media (Facebook and Instagram), and information via the webpages of two universities (Mid Sweden University and Åbo Akademi). Of the 1 169 participants who opened the survey, 363 participants terminated the survey prior to the completion of all stages. After giving an active digital informed consent, 806 participants (aged 18–83 years, $M = 44.32$, $SD = 14.03$, 87.5% women) completed the survey.

Table 3. Indicators of Internal Consistency and Validity (and Factor Correlations) for the Final Two-Factor Model with Eight Items

| Type of factor Estimates | CR | AVE | MSV | 1 |
|--------------------------|------|------|------|------|
| (1) Avoidance | .873 | .696 | .009 | - |
| (2) Anxiety | .840 | .525 | .009 | .093 |

Note. CR = Composite Reliability; AVE = Average Variance Extracted; MSV = Maximum Shared squared Variance.

Table 4. Estimates of Confirmatory Factor Analyses: Model-Fit Indices for a Two-Factor Model and Two Revised Two-Factor Models

| Model | χ^2 (df) | χ^2/df | CFI | SRMR | RMSEA | $\Delta \chi^2$ |
|-------------------------------|---------------|-------------|-----|------|-------|-----------------|
| Two-factor | 371.68 (26) | 14.29 | .91 | .09 | .13 | |
| Two-factor-R1 ^{a)} | 189.19 (25) | 7.57 | .96 | .08 | .09 | 182.49 |
| Two-factor-(R2) ^{b)} | 58.44 (18) | 3.24 | .99 | .06 | .05 | 130.75 |

Note. CFI = Comparative Fit Index, SRMR = Standardized Root Mean square Residual, RMSEA = Root Mean Square Error of approximation.

(a) The proposed 2-factor structure with error terms for Item 5 and Item 6 correlated.

(b) The proposed 2-factor structure with 8 items (minus Item 4) with error terms for Item 5 and Item 6 correlated.

The survey was administered using Qualtrics (<http://www.qualtrics.com>) during March to May 2020, and was presented to participants as a study concerning humans' social functioning and preferences, with the purpose of improving both the measurement and the understanding of social interactions. The survey started with four demographic questions (age, gender, nationality, and whether the participant was a student or not) followed by the ECR-RS Global questionnaire and three other questionnaires (measuring compassion, self-compassion, and empathy) not reported here. The four questionnaires were presented in a random order for the participants. To prevent participants from taking the survey more than once, Qualtrics placed a cookie in participants' web browsers, neglecting them from multiple partaking.

4.2. Data analytic procedures

Equivalent to Study 1, we used both (1) the same indices of model fit (and the suggested cutoff criteria for fit indices), and (2) the same indices of reliability and validity (and the suggested cutoff criteria to index reliability/validity concerns).

Compared to Study 1, in this study we looked more systematically at the measurement across specified groups. That is, measurement invariance tests were conducted between male and female participants, and across age groups (median split; younger ≤ 46 ; older ≥ 47 years) using a sequential strategy when testing the invariance at different levels. In the first model, the factor structure was specified identically across groups, and all parameters were freely estimated across groups to establish configural invariance (i.e. equivalence in factor structure across the groups). Second, a metric (weak) invariance model was tested, in which the factor loadings were constrained to be equal. The fit of this model was compared to the configural (baseline) model. Invariance exists if the fit of the metric invariance model is not substantially poorer than the fit of the configural model. Third, a scalar (strong) invariance model was tested. In this model, factor loadings and item intercepts were constrained to be equal, and this fit was compared against the metric model. Finally, we tested a residual (strict) invariance model, in which factor loadings, intercepts, and residual variances are constrained to be equal and then compared to the scalar measurement invariance model. Even though a scaled chi-square difference test for nested models can be used to index invariance

Table 5. Indicators of Internal Consistency and Validity (and Factor Correlations) for the Final Two-Factor Model with Eight Items

| Type of factor Estimates | CR | AVE | MSV | 1 |
|--------------------------|------|------|------|-----|
| (1) Avoidance | .890 | .729 | .028 | - |
| (1) Anxiety | .823 | .502 | .028 | .17 |

Note. CR = Composite Reliability; AVE = Average Variance Extracted; MSV = Maximum Shared squared Variance.

between models, it suffers from the same dependency on sample size as the minimum fit function statistic, and thus, changes in model fit according to CFI and RMSEA were used. According to the criteria suggested by Chen (2007), a decrease in CFI of $\geq -.01$ in addition to an increase in RMSEA of $\geq .015$ corresponds to an adequate criterion indicating a decrement in fit between models for sample sizes > 300 . We used JASP (JASP Team, 2020) to conduct all statistical analyses.

5. Results

The goodness-of-fit indices for the models as well as the relative χ^2 difference tests of improvements of the CFAs are presented in Table 4. The two-factor structure model based on all nine items suggested an inadequate fit of the model—with the exception of an adequate CFI—and the modification indices suggested that the inclusion of correlated error terms (Item 5 and Item 6) in the model would improve the model fit substantially. While this generally turned out to be true and all other standard indices suggested a good fit, the relative chi-square statistics and the RMSEA failed to reach acceptable fit of the model. As in Study 1 the modification indices suggested that permitting “I find it easy to depend on others” (from the factor Avoidance) to load on both the Avoidance and Anxiety factors would improve model fit, and this item was therefore removed. With this modification, the model was further improved, with all fit indices—except for relative chi-square—reaching good ranges.

The final model, presented in Table 5, shows that CR indices indicated a good reliability for both factors (above .70) and no validity concerns (with AVE being less than CR and greater than .50). Indices of discriminant validity indicated good validity for both factors, with all AVE markedly higher than MSV.

Finally, two multi-group models were performed. The fit, for both genders and the two age cohorts, respectively, was examined simultaneously. Data presented in Table 6 shows adequate fit for all models, suggesting that the final two-factor structure was similar across gender and the age cohorts.

6. Discussion

In this study, we replicated the results from Study 1 by showing that (1) the two-factor structure model based on all nine items suggested an inadequate fit of the model, and (2) after the modifications identical to those in Study 1, all indices suggested a good model fit with the only exception that relative chi-square was close too, but did not reach adequate fit in Study 2.

While the estimates for the three conventional indices of goodness-of-fit were virtually identical across the studies, the minor deviation with respect to the chi-square statistics was expected due to the larger sample size, as larger sample sizes are having greater chances of obtaining a statistically significant chi-square value. Finally, when looking more systematically at the measurements across specified groups, the final two-factor structure proved to be similar across gender and the age cohorts.

Table 6. Results of the Multi-Group Tests of Invariance Between Age and Gender

| Model | χ^2 (df) | $\Delta\chi^2$ (df) | CFI | Δ CFI | RMSEA | Δ RMSEA |
|--------------------------|---------------|---------------------|------|--------------|-------|----------------|
| <i>Age invariance</i> | | | | | | |
| Configural | 86.34 (36) | - | .985 | - | .059 | - |
| Weak/Metric | 94.82 (42) | 8.48 (8) | .984 | .001 | .056 | .003 |
| Strong/Scalar | 122.45 (48) | 27.63 (4) | .977 | .007 | .062 | .006 |
| Strict/Residuals | 144.85 (57) | 22.40 (9) | .973 | .004 | .062 | .000 |
| <i>Gender invariance</i> | | | | | | |
| Configural | 88.01 (36) | - | .984 | - | .060 | - |
| Weak/Metric | 96.28 (42) | 8.27 (8) | .983 | .001 | .057 | .003 |
| Strong/Scalar | 102.25 (48) | 5.97 (4) | .983 | .000 | .053 | .004 |
| Strict/Residuals | 132.26 (57) | 30.01 (9) | .977 | .006 | .058 | .005 |

Note. $\Delta\chi^2$ -values are with respect to the previous level of measurement invariance.

7. General discussion

In this paper, we present two studies that assessed the two-factor dimensional structure of attachment security and psychometric properties of a Swedish translation of the ECR-RS Global. A modified version, with five avoidance items and three anxiety items, showed good internal consistency, as well as good convergent and discriminant validity. These findings correspond to what has been shown in previous studies of similar but longer versions of the ECR scales in English (Fraley, 2014; Fraley et al., 2011; Ravitz et al., 2010; Siroňová et al., 2020), and in different translations of the ECR-RS for specific relationships (Donbaek & Elklit, 2014; Karatas & Demir, 2019; Moreira et al., 2015; Siroňová et al., 2020).

The results from the EFA showed the best fit for a two-factor structure of the ECR-RS Global including nine items for the dimensions avoidance (six items) and anxiety (three items). This factor structure is in line with previous two-factor conceptualizations of attachment (Cameron et al., 2012; Ravitz et al., 2010) and is equal to cross-cultural findings from the ECR-RS with nine items for each specific relationship domain (Donbaek & Elklit, 2014; Fraley et al., 2011; Karatas & Demir, 2019; Moreira et al., 2015; Siroňová et al., 2020).

Results from the CFA in both studies indicated good fit for the two-factor solution on all fit indices except for relative chi-square in Study 2 even after the modifications of correlated error terms between Item 5 and Item 6, and removal of Item 4, “I find it easy to depend on others”. Some previous studies of the ECR-RS for specific relationships have also correlated the error terms for Item 5 and Item 6 for all of the four relationships (Moreira et al., 2015; Siroňová et al., 2020), or for romantic relationships only (Karatas & Demir, 2019). The problems encountered with Item 4 in this study might be related to translation issues, since this particular item was difficult to translate. The expression “depend on” can have several meanings in English, such as to trust, to be in need of, or to be affected by. Even though attachment avoidance (Item 4 subscale) and dependence have shown negative associations (Cantazaro & Wei, 2010), we agreed on using a translation closer to trust rather than dependence, mainly because it constituted a more comprehensive and straightforward question in Swedish. In another English-to-Swedish translation of an attachment instrument (the ASQ-SF, Axfors, 2014), while for the item “I find it difficult to depend on others” the translation of “depend” was closer to “to be in need of”, the translation of the item “I find it easy to trust others” was very similar to the translation of Item 4 in our study, without any reports of problematic cross-loadings (Axfors et al., 2017). However, some other studies from previous

versions of ECR-scales have also shown problems with cross-loadings of Item 4 (Donbaek & Elklit, 2014; Fraley et al., 2011). Further work is needed to cross-validate the measurement model of the ECR-RS Global in order to determine the appropriateness of Item 4.

The multi-group tests of invariance for both age and gender show no decrement in model fit at any levels, suggesting that the final 8-item model obtained from the CFA works equally well for both the two age groups and the two genders. With respect to gender, a possible limitation of the study was the high proportion of women participating, since highly unbalanced distributions between groups make it less likely to detect violations of invariance (Yoon & Lai, 2018).

Based on our information, this study is the first to examine the factor structure of the ECR-RS Global. Results are encouraging as this short instrument for measuring attachment security in an adult population showed good reliability and validity with cross-sectional data. This short global measure could be used in various research contexts to capture trait-like attachment dimensions of avoidance and anxiety, which can have relevance for a plethora of research questions concerning social and emotional functioning. To further deepen the support for this questionnaire, future studies should test reliability of the instrument over time, assess its validity in relation to other psychological concepts, and cross-validate the modified measurement model with eight items used in this study.

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